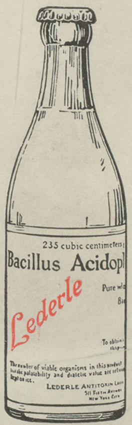
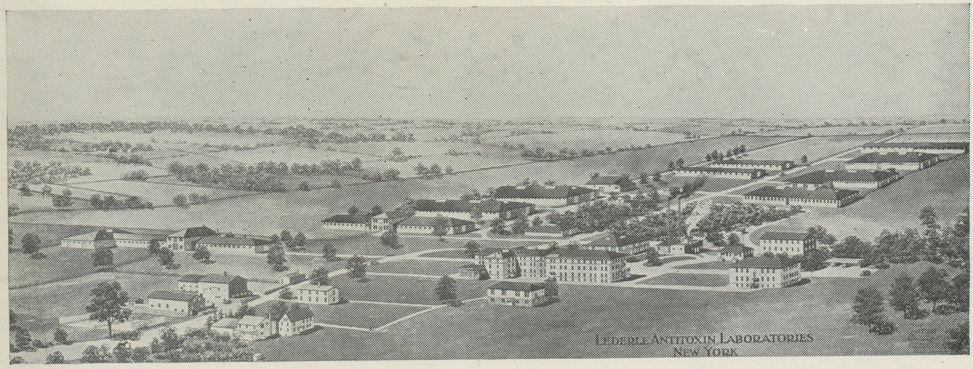
Adv. Chance

Bacillus Acidophilus Milk

Lederle



Council Accepted



View of Farm and Laboratories in Pearl River, Rockland County, New York, Where Bacillus Acidophilus Milk (Lederle) Is Produced

Bacillus Acidophilus Milk

Lederle

Pure, whole milk, cultured with
Bacillus Acidophilus

Accepted by the Council on Pharmacy and Chemistry of the American Medical Association for New and Non-Official Remedies on January 26th, 1923

Bacteriological Researches

EXTENSIVE researches on intestinal bacteriology by Rettger and his co-workers at Yale University have demonstrated that the intestinal flora can be successfully transformed by the administration of milk cultures of Bacillus Acidophilus. According to Torrey, Kendall, Rettger, Bass, and others, this bacillus is a normal inhabitant of the lower intestinal tract of man; but under ordinary conditions of diet this organism is present in very small numbers.

In the new-born infant, the intestinal tract is free from germs; but within five to ten hours after birth, bacteria can be demonstrated. If the infant is breast-fed exclusively, the intestinal flora is simple and uniform and invariably consists of acid-producing bacteria called "aciduric bacteria." Of these, the bacillus bifidus predominates with the Bacillus Acidophilus present in smaller proportions. On the other hand, as soon as the infant is fed on other foods or if it is bottle-fed, Bacillus Acidophilus becomes the dominant organism and the bacillus bifidus is much less numerous. Usually, by the time breast feeding is discontinued and a diet composed chiefly of cow's milk is substituted, the flora consists almost entirely of Bacillus Acidophilus with only a small proportion of the bacillus bifidus. Such a flora, of course, exists only under normal or healthy conditions in the intestinal canal.

During the next two or three years, or as long as milk forms a large part of the diet, Bacillus Acidophilus remains the predominant organism; but as the child grows older and the diet becomes more varied with a reduction in the quantity of milk in the diet, the intestinal flora becomes more and more complex and the simple aciduric bacteria give way to a variety of other types. According to BASS[1], the Bacillus Acidophilus usually constitutes from none up to five or six per cent of the living bacteria present in the intestinal tract of normal adults. The other bacterial types, such as the bacillus coli, cause putrefaction of the food with the production of gas and toxic substances, resulting in constipation and intestinal toxemia. Under conditions of a mixed diet, the predominance of the bacillus coli among the intestinal bacteria continues from later childhood to adult life.

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[1] BASS, "Transformation of the Intestinal Flora"; *Annals Clin. Med.*, July, 1922.

The ratio of the number of bacillus coli to the Bacillus Acidophilus has been used by CANNON[2] to indicate the extent of putrefaction in the intestine. The larger the number of Bacillus Acidophilus which can be maintained, the less other bacteria will be present and, therefore the less putrefaction and intoxication will occur. Clinical and bacteriological studies have shown that the Bacillus Acidophilus, which is a normal inhabitant of the intestinal tract and the predominant organism at a certain period of early life in most normal individuals, will thrive better than any other lactic acid organism when introduced into the lower intestine by way of the mouth.

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[2] CANNON, "The Effects of Diet on Intestinal Flora"; *Jour. Infect. Dis.*, Oct., 1921.

When living milk cultures of the Bacillus Acidophilus are given in large quantities, this organism soon becomes the predominant type of bacteria in the intestines; approximating if not equaling the condition which exists in infancy and early childhood. As long as the Bacillus Acidophilus is maintained as the predominant organism in the intestinal flora, a healthy functioning of the intestine is favored and the general bodily health promoted.

The investigations of RETTGER and CHEPLIN[3] have shown that:

> "Milk cultures of Bacillus Acidophilus have proven themselves to be particularly effective in transforming the intestinal flora of man. In some instances 500 cubic centimeters were sufficient to bring about simplification with the desired elimination of the non-aciduric forms. A total of 1,000 cubic centimeters taken daily in two applications in every instance brought about the transformation in the course of a very few days."

The use of Bacillus Acidophilus Milk (Lederle) brings about profound transformation of the intestinal bacterial flora in which Bacillus Acidophilus becomes the predominant organism.

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[3] RETTGER AND CHEPLIN, "A Treatise on the Transformation of the Intestinal Flora"; *Yale University Press,* 1921.

KENDALL[4] has pointed out that

> "In order to be certain, however, that Bacillus Acidophilus will colonize successfully and certainly within the intestinal tract, the mistake must not be made of keeping cultures of this organism too long upon artificial media before introduction into the body. That is to say, the artificial perpetuation of a strain of Bacillus Aciphophilus for long periods of time outside the human body may so modify its adaptability to intestinal conditions that it will not fulfill the purpose for which it is intended. Fresh isolations from the intestinal contents should be made as frequently as is necessary to ensure active acclimatizing strain. Failure to realize the importance of these relatively simple and perfectly obvious details has prevented the accumulation of a satisfactory literature upon the highly important practical aspects of bacterial implantation."

In order to comply with these very important details which KENDALL has emphasized, Bacillus Acidophilus Milk (Lederle) is prepared with cultures of Bacillus Acidophilus that are freshly isolated from the intestinal contents as frequently as may be necessary to insure their adaptability to intestinal implantation.

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[4] KENDALL, "Recent Developments in Intestinal Bacteriology"; *Amer. Jour. Med. Sciences,* Aug., 1918.

Recently, a note of warning has been sounded by BASS[5] who states:

> "Commercial interests have already placed upon the market B. Acidophilus in the form of tablets, capsules and liquids, and physicians are prescribing them. I recently examined some of these preparations on the market to determine the number of viable B. Acidophilus contained therein.
>
> "In the instance of tablets, none of those examined was found to contain as many as 1,000 viable bacteria of any kind per tablet. If it should be granted that all the viable bacteria present were B. Acidophilus, it would take more than 1,000,000,000 tablets, or more than 20 tons, to contain as many bacilli as are contained in 1,000 cc, or the usual daily dose, of the acidophilus milk; the quantity found, by most investigators at least, to be necessary to transform the flora. Bacteria were more numerous in the commercial liquid cultures examined. If they were all B. Acidophilus, a patient would have to drink only about seven or eight gallons daily to get as many as he would in 1,000 cc of the acidophilus milk culture."

BACILLUS Acidophilus Milk (Lederle) is recommended in the treatment of

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[5] BASS, "Transformation of the Intestinal Flora"; *Southern Medical Journal,* Jan., 1923.

Uses

intestinal disturbances due to putrefactive changes; in mucous colitis; obstinate constipation; intestinal toxemia; chronic diarrhea, particularly the refractory diarrheas that often accompany tuberculosis; in tropical sprue; in certain skin diseases, especially acne; and in typhoid fever dysentery and cholera. Also in toxic diarrheas of infants and in infant feeding.

The researches of Coleman[6] upon diet in typhoid fever have indicated that artificial implantation of Bacillus Acidophilus may well be an important adjunct in the high calory treatment of this disease. The intestinal group of diseases, including typhoid fever, paratyphoid fever, dysentery and cholera, would all appear to be amenable to this form of therapy embracing a high calory diet, together with the intestinal implantation of Bacillus Acidophilus.

Furthermore, Rettger and Cheplin state:

> "Aside from any therapeutic or medicinal properties which acidophilus milk may possess, it should gain wide use as a beverage alone, or as a food which has the nutri-

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[6] Coleman, "Influence of High Calory Diet on Course of Typhoid Fever"; *Jour. Amer. Med. Assoc.*, Aug. 4, 1917.

> tional properties of milk as such. Furthermore, the product has a pleasing odor and is decidedly palatable."

In pediatrics, Bacillus Acidophilus Milk (Lederle) may be used to control the toxic diarrheas of infants. The curd in Bacillus Acidophilus Milk is very fine, soft and flocculent; thereby insuring better digestion and absorption. Thus, DR. H. L. K. SHAW[7] of Albany states:

> "The albumen in acid milk is more digestible and can be given to young infants in larger proportions than in sweet cow's milk. Babies fed on acid milk mixtures for a long period of time look healthier and thrive better on the average than those fed on the regulation sweet milk formulas."

The nature of the phenomenon of Bacillus Acidophilus therapy was investigated by KOPELOFF[8] at the Psychiatric Institute on Ward's Island, New York City. He states:

> "Having obtained relief from chronic constipation and diarrhea by treatment with milk fermented with B. Acidophilus, fur-

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[7] SHAW, "Acid Milk in Infant Feeding"; Report of American Pediatric Society, *Jour. Amer. Med. Assoc.*, June 3, 1922.

[8] KOPELOFF, "Is Bacillus Acidophilus Therapy a Strictly Bacteriological Phenomenon?" *Proc. Soc. Exp. Biol. and Med. Vol. XX, No.* 3, 1922.

ther studies are in progress to determine whether the essential nature of this phenomenon is physical, chemical or bacteriological.

"Subject to the limitations of the material under consideration the following points have been established:

"1. B. Acidophilus therapy is not a physical phenomenon since patients receiving sterile milk were not relieved of constipation.

"2. B. Acidophilus therapy apparently is not a strictly chemical phenomenon, since patients receiving B. Acidophilus milk which had been pasteurized to kill all living forms, were not relieved of constipation.

"3. B. Acidophilus therapy appears to be essentially a bacteriological phenomenon, since patients were relieved of constipation by the ingestion of milk fermented by B. Acidophilus.

"4. Relief from chronic constipation has persisted for six months after the ingestion of B. Acidophilus has been discontinued.

"5. Viable B. Acidophilus organisms in appreciable number have been recovered from the feces of patients six months after the ingestion of B. Acidophilus milk."

Preparation

THE milk used in the manufacture of Bacillus Acidophilus Milk (Lederle) comes from clean, healthy cows that are tested semi-annually for tuberculosis by veterinarians from the Bureau of Animal Industry of the United States Department of Agriculture in cooperation with the New York State Department of Farms and Markets. This testing is conducted under the "Federal Accredited Herd Plan."

This milk is produced under the most modern and scientific dairy methods, as is proven by the fact that during the past two years bacteriological examination of 722 samples showed that this milk is well within the limits of bacterial count allowed by the standard for "Certified" milk in New York City.

A Complete Food

SINCE Bacillus Acidophilus Milk (Lederle) is prepared from whole milk, which in itself is a very complete food, it may be used in large amounts and even in some cases to constitute the entire diet for a few days until the intestinal flora has been transformed; after which its continued use in smaller amounts will maintain the aciduric flora of the intestine.

THE following points are worthy of special emphasis:

Advantages

1. Bacillus Acidophilus Milk (Lederle) contains a young culture of living Bacillus Acidophilus. This product is particularly potent in bringing about the desired transformation of undesirable and unhealthful bacterial types in the intestine to a flora consisting chiefly of Bacillus Acidophilus which is favorable to the normal, healthy functioning of the intestine; thus tending to promote the general bodily health.

2. Bacillus Acidophilus Milk (Lederle), being prepared from whole milk, contains sufficient lactose for the Bacillus Acidophilus therapy of diarrhea. When used for correcting chronic constipation, the efficiency of the Bacillus Acidophilus Milk will be enhanced by the addition of lactose as explained on page 18.

3. Bacillus Acidophilus Milk (Lederle) is nutritious and is tolerated by many who are unable to assimilate an ordinary diet. Hence, this product has distinct value as a food for convalescents, for it

is capable of maintaining the nitrogen balance and preventing tissue waste.

4. Bacillus Acidophilus Milk (Lederle) has been proven to retain its therapeutic activity and palatability for a sufficient period to permit of its general distribution.

Dosage

FOR adults, the usual amount of Bacillus Acidophilus Milk recommended for the first few days is 1,000 cubic centimeters (one quart) daily. After the first few days, this amount may usually be decreased; but some cases may require this quantity to be continued longer or even increased.

The following scheme of dosage has proved useful in bringing about successful results. The patient is advised to take the contents of six bottles of Bacillus Acidophilus Milk (Lederle) daily for the first three days; then three bottles daily thereafter. The Bacillus Acidophilus Milk may be taken at or between meals, according to the individual desire. While taking the larger quantities (six bottles), it may be desirable to reduce the amount of other foods.

During the first few days of the treatment (while the larger quantities of Bacillus Acidophilus Milk are being taken), some persons may experience such symptoms as distention of the abdomen, or bloating, and flatulence. These symptoms are brought about by the gas-forming bacteria of the intestine; but if the recommended amount of Bacillus Acidophilus Milk is adhered to, so that the intestinal flora can be rapidly transformed, these symptoms will disappear.

According to Bass and Jones[9]:

> "To get best results, the acidophilus milk should be taken with the meals, preferably some with each meal. The object is to heavily inoculate the food with viable bacilli. The quantity required is from one pint to one quart daily. Practically, a glass of acidophilus milk [one 8-ounce bottle] with each meal gives best results."

Some persons have a natural aversion to the taste of any milk, either sweet or sour. Such persons often find that the palatability of Bacillus Acidophilus Milk (Lederle) may be materially enhanced for them by diluting the Bacillus Acidophilus Milk one-third to one-half with carbonated water.

Likewise, for some children the palatability of Bacillus Acidophilus Milk (Lederle) may be made more appealing to them by diluting the Bacillus Acidophilus Milk with orange juice.

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[9] Bass and Jones, "The Possibility and Practicability of Transformation of the Intestinal Flora by Feeding Milk Cultures of Bacillus Acidophilus"; *New Orleans Medical and Surgical Journal,* September, 1923, page 116.

For infant feeding, Bacillus Acidophilus Milk (Lederle) may be diluted with boiled water (cooled) in such proportions as the case may require, and sufficient lactose (milk-sugar) should be added to bring the mixture up to the required sugar content of the feeding formula. In case the lactose exerts a marked laxative effect, cane-sugar (granulated sugar) may be substituted.

Addition of Lactose (Milk-Sugar)

IN some cases of chronic constipation, it is highly desirable to reinforce the Bacillus Acidophilus Milk with lactose (milk-sugar). Of all the common sugars, lactose is the most slowly absorbed in the digestive tract and, if taken in liberal quantities, reaches the large intestine where it serves as an especially useful food for the rapid development of Bacillus Acidophilus. For this purpose, usually 200 grams of lactose for every 1,000 cubic centimeters of the Bacillus Acidophilus Milk may be taken daily. This quantity may be approximated by using 7 teaspoonfuls of lactose (milk-sugar) for every bottle of Bacillus Acidophilus Milk (Lederle). Smaller amounts will suffice for some patients, while for others it may be necessary to increase the lactose up to 10 teaspoonfuls or more in order to correct the constipation. The amount of lactose should be adjusted to meet the requirements of each patient individually.

In very exceptional cases of obstinate constipation, it may be difficult to establish the Bacillus Acidophilus in the intestinal tract. In such cases, the constipation may even be aggravated during the first two or three days' treatment with Bacillus Acidophilus Milk and it may be advisable for the patient to take a laxative; but the constipation can usually be corrected if sufficient lactose and Bacillus Acidophilus Milk are taken daily.

The lactose (milk-sugar) may be added directly to the milk and thoroughly mixed with it; but many patients prefer to dissolve the milk-sugar in water and then drink the sugar solution separately, so that the flavor and palatability of the Bacillus Acidophilus Milk will not be altered.

After a favorable intestinal condition has been established, the amount of Bacillus Acidophilus Milk may usually be decreased to two or three bottles daily with a corresponding reduction of lactose.

Effectiveness

RETTGER and CHEPLIN say:

"The experience of the last six months has shown that the administration of this product is the most effective and practical method of implanting the submissive aciduric organism in the digestive tract, and one which is not only well-borne by the subject but is as a rule welcomed by him because of its unique qualities as a beverage and a real food."

Packages

Bacillus Acidophilus Milk

Lederle

Code Word	
LACIDOF	Six 8-ounce bottles.
LACK	Three 1-quart bottles.

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